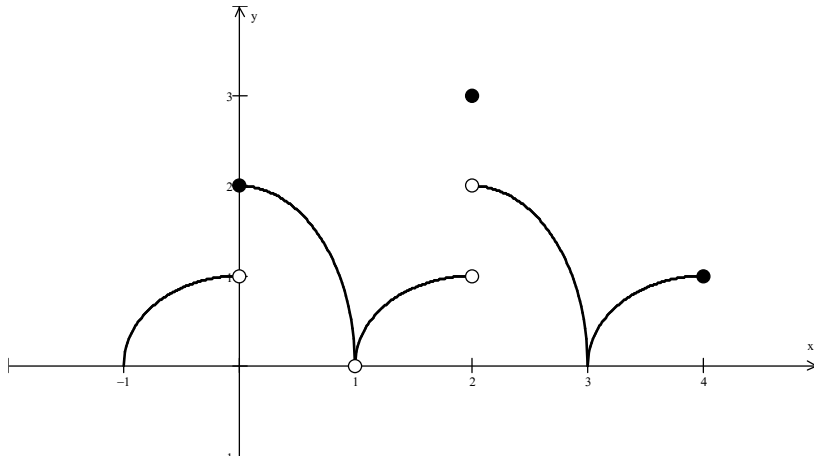


2. Using the graph of function $f(x)$ below, find the following limits:



a. $\lim_{x \rightarrow 0^-} f(x)$

b. $\lim_{x \rightarrow 0^+} f(x)$

c. $\lim_{x \rightarrow 0} f(x)$

d. $f(0)$

e. $\lim_{x \rightarrow 1} f(x)$

f. $f(2)$

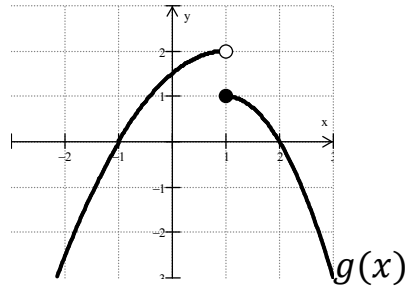
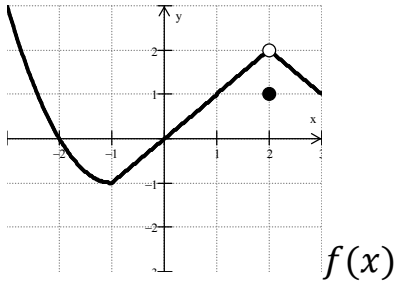
g. $\lim_{x \rightarrow 0^-} f(x)$

h. $\lim_{x \rightarrow 2^-} f(x)$

i. $\lim_{x \rightarrow 2^+} f(x)$

j. $\lim_{x \rightarrow 2} f(x)$

3. The graphs of f and g are given. Use them to evaluate each limit, if it exists. If the limit does not exist, explain why. You do not need to show work on these, but you may.



a. $\lim_{x \rightarrow 2} [f(x) + g(x)]$

b. $\lim_{x \rightarrow 1} [f(x) + g(x)]$

c. $\lim_{x \rightarrow 0} [f(x)g(x)]$

d. $\lim_{x \rightarrow 0} \frac{f(x)}{g(x)}$

e. $\lim_{x \rightarrow 2} [x^3 f(x)]$

f. $\lim_{x \rightarrow 1} \sqrt{3 + f(x)}$

g. $\lim_{x \rightarrow 2} g(f(x))$

Find the following limits using algebraic methods. Please show the work that supports your answers.

4. $\lim_{t \rightarrow 0} \frac{\sqrt{t^2+9}-3}{t^2}$

5. $\lim_{t \rightarrow -3} \frac{t^2-9}{2t^2+7t+3}$

6. $\lim_{t \rightarrow -4} \frac{\frac{1}{4} + \frac{1}{x}}{4+x}$

$$7. \lim_{x \rightarrow \frac{\pi}{4}} 3 \cos x$$

$$8. \lim_{x \rightarrow 0} 3 \frac{x}{\cos x}$$

$$9. \lim_{x \rightarrow 0} 3 \frac{x}{\sin x}$$

$$10. \lim_{x \rightarrow 0} \frac{\sin 3x}{\sin 8x}$$

$$11. \lim_{x \rightarrow 0} \frac{\tan 7x}{\sin 5x}$$

$$12. \lim_{x \rightarrow \infty} \sin x$$

$$13. \lim_{x \rightarrow \infty} \sin \frac{1}{x}$$

$$14. \lim_{x \rightarrow 0} \frac{x^2 \sin x}{1 - \cos^2 x}$$

$$15. \lim_{x \rightarrow 0} \frac{\sin^2(7x)}{\sin^2(11x)}$$

$$16. \lim_{x \rightarrow 0} \frac{\cos x - \cos^2 x}{x}$$

17. Sketch the graph of a function that satisfies all of the following conditions:

$$f(0) = 3,$$

$$\lim_{x \rightarrow 0^-} f(x) = 4,$$

$$\lim_{x \rightarrow 0^+} f(x) = 2,$$

$$\lim_{x \rightarrow -\infty} f(x) = -\infty,$$

$$\lim_{x \rightarrow \infty} f(x) = 3,$$

$$\lim_{x \rightarrow 4^-} f(x) = -\infty,$$

$$\lim_{x \rightarrow 4^+} f(x) = \infty$$

